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REPORTS AUTOMATIC WELDING ON INCREASE IN USSR,
BUT SOME PLANTS SLOW TO APPLY IT

SOME WELDING EQUIPMENT STANDS IDLE -- Moscow, Izvestiya, 25 Mar 51

Automatic electric welding under flux has gradually superseded a consider-
 able amount of hand welding during the last 10 years, and is now being applied
 in all branches of industry.

In bridge building, for example, until a short time ago, rivets were used
 throughout in the construction of steel bridges. Recently, however, several
 railroad bridges of partly welded and partly riveted construction were built,
 and all-welded bridges are now in the process of development. Welding under
 flux is effecting a technological change in the industry.

Application of automatic and semiautomatic welding is enabling many plants
 to increase their output of metal structures without increasing their production
 areas. Prominent among these plants is the Dnepropetrovsk Plant named Molotov,
 which turns out welded units for the frameworks of high buildings in Moscow.

Automatic welding is starting to play an important role in the manufacture
 of large-diameter steel pipes, including oil and gas mains. At the Khar'kov
 Pipe Plant, the productivity of welding units recently went up ten times, work-
 ing conditions were improved considerably, and expenditures were cut sharply,
 with 100 rubles being saved for every ton of piping. The outstanding feature of
 the automatic method, however, is the high quality of weld which is obtained
 from it.

Welding of pipe-joint seams under flux was performed in the field for the
 first time in the world during the laying of the Dashava-Kiev gas line. This
 achievement, as well as work on welding the longitudinal seams of the main, won
 a Stalin Prize. Over 90 percent of the joint seams of one pipeline were made
 in the field with automatic and semiautomatic machines, reducing welding time
 considerably.

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Not long ago only one third of all seams were welded by automatic machines. This situation changed sharply in 1948 - 1949 when the new method of hose welding under flux was developed. Because it is portable and highly maneuverable, the hose apparatus is everywhere replacing hand methods. For achievements scored by using the hose welding apparatus, a Stalin Prize was awarded by the Council of Ministers USSR in 1949. By the end of 1950 there were over 1,000 hose welding devices operating in industry. Wide mechanization of welding processes has been effected in several shipbuilding plants by using semiautomatic hose welders in conjunction with welding tractors.

The Druzhkovka Toretskiy Mining-Machine-Building Plant imeni Voroshilov is an outstanding exponent of advanced welding methods. It was the first enterprise in the world to establish continuous production of welded mine cars. The main seams of these cars are welded automatically, so that it takes only 4 minutes to weld the bodies, whereas with hand welding it would take 2½ hours. Other coal-mining machine enterprises, such as the Khar'kov Svet Shakhtera Plant, are successfully applying welding under flux. Many plants of the Ministry of Transport-Machine Building, including the Gor'kiy Krasnoye Sormovo and Leninskaya Kuznitsa plants are utilizing mechanized welding in building river vessels and steamships.

Offsetting the plants which successfully utilize advanced automatic and semiautomatic welding methods, a considerable number of enterprises are not devoting sufficient attention to these methods. A single ministry or main administration may have under it both plants which apply the new welding techniques and ones which still follow the old way. A typical example of the latter case is the Kiselevsk Plant of the Ministry of the Coal Industry, which produces mine cars. Former directors of this plant have expressed the intention of applying the methods of the Toretskiy Plant, but the plant continues to weld cars by hand. It is hoped that the new plant directors, Andriyenko and Lesik, will devote serious attention to the importance of utilizing the new welding methods.

It is unfortunate that the Ministry of the Petroleum Industry is failing to apply the methods utilized in the construction of the above-mentioned Dashava-Kiev gas main to the laying of other pipelines. The ministry has been working without much success on the application of automatic welding in building large oil-storage tanks. The directors of the ministry are lavish with their promises, but the fact remains that in a 2-year period only one tank has been turned out under the new welding methods.

The Ministry of Construction- and Road-Machine Building is doing no better. While the Nikolayev and Kurgan road-machine plants are successfully applying new welding methods and continuously raising the efficiency of their automatic welding machines, other plants of the ministry are not using automatic welding machines, preferring hand methods. Automatic equipment acquired by the Chelyabinsk Plant, imeni Kolyushchenko is standing idle.

Automatic and semiautomatic machines can be used for building up metal as well as for regular welding. Mechanization of build-up welding in railroad construction should save a great deal of capital expenditure. However, directors of repair plants of the Ministry of Transportation are keeping their production geared to the old methods of hand welding. There are, to be sure, some advanced plants in this ministry, such as the Plant imeni Shevchenko of the Southwestern Railroad System, and the Izyum and Poltava plants, but the technological methods of these plants are not studied or applied in the other locomotive- and car-repair plants throughout the country.

Right now automatic and semiautomatic welding machines, many of them made in the shops of the Institute of Electric Welding, are lying idle in plants of the Ministry of Transportation. The directors of the ministry have had ample time to set their plants in order and to see that lagging plants put the new welding technologies into practice.

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The situation at some shipbuilding and ship-repair plants of the river and maritime fleets is just as unsatisfactory, and the same holds for some agricultural-machine-building plants.

Experience of the last years has shown, however, that the ministries having special welding departments, including the Ministry of Transportation and the Ministry of the Shipbuilding Industry, are introducing the new welding technology most rapidly and with the greatest success.

Every means must be used to popularize the methods of the leading enterprises and of individual Stakhanovites. Plants should organize complex brigades, consisting of Stakhanovites, engineers, technicians, and scientists. Professional assistance contracts should be drawn up by the plants with such organizations as the Institute for Electric Welding and other scientific-research institutes.

In the end, it is the responsibility of plant directors and the technical departments of main administrations and offices to broaden and intensify the industrial application of automatic electric welding under flux. -- E. Paton, member, Academy of Sciences USSR, and director, Institute of Electric Welding

DEVELOP NEW WELDING TRANSFORMERS -- Moscow, Vestnik Mashinostroyeniye, Mar 51

The Ministry of the Electrical Industry, in collaboration with the Academy of Sciences USSR, has developed a new series of eight single-body welding transformer-regulators. Built according to the plans of Academician V. P. Nikitin, the machines combine a single-phase transformer and a reactor coil, connected electrically and magnetically to each other.

Machines of the series regulate power for hand, semiautomatic, and automatic welding, and carry currents ranging from low to heavy.

The model designations of the machines and their specifications are listed below.

[See table on following page.]

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Designation:	<u>STAN-0</u>	<u>STAN-1</u>	<u>STN-500</u>	<u>STN-700</u>	<u>STN-1,000</u>	<u>STND-500</u>	<u>STND-1,000</u>	<u>STND-2,000</u>
<u>Specifications</u>								
Over-all dimensions of housing (mm):								
Length	698	870	796	796	830	856	856	1,050
Width	429	520	429	429	620	796	796	900
Height	485	800	840	840	1,180	1,295	1,295	1,295
Primary voltage	220/110; 380							
Secondary voltage, no load	63-83	60-70	60	60	65	60	69-78	72-84
Repeated short-time duty (%)	65	65	65	60	60	65	60	50
Rated power (kva)	8.7	22	30	42	65	30	69	144
Rated welding current (amp)	140	350	500	700	1,000	500	1,000	2,000
Regulating limits of welding current (amp)	25-150	60-480	150-700	225-900	275-1,150	175-800	400-1,200	600-2,500
Efficiency (%)	83	83	87	85	86	87	86	[no data]
Power factor	0.51	0.52	0.55	0.66	0.61	0.55	0.61	[no data]
Weight of Machine (kg)	80	185	270	380	[no data]	450	534	600

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